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ABSTRACT

This study investigated whether classroom teachers who have used computers in training sessions are committed to their use in the classroom, and whether some educational applications are consistently seen to be of greater value than others. A questionnaire was designed to determine perceptions regarding: (1) where the computer belongs in terms of school priorities; (2) how effective the computer is; (3) whether teachers and students like computers; and (4) what educational application makes computers most valuable. Teachers who completed the questionnaire had participated in a course entitled "Classroom Application of Microcomputers." Of the group of 27, 25 were practicing classroom teachers of grade levels from kindergarten to the college level. The teachers expressed a strong commitment to computer use. Respondents felt a preference, however, for applications which favored gifted or remedial students rather than applications for all students, such as computer literacy, programming, and problem solving. They also indicated a strong preference for those computer applications which would aid them with instructional and clerical tasks. (JD)

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The More Things Change. . .: Teachers and Classroom
Computers

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It's difficult to read anything on current trends in education without encountering a flurry of predictions about the impact that computers will have. Though an important research tradition has begun to develop regarding the influence the machines have on student achievement and on the students' disposition toward them (see Griswold, 1984 for a summary), very little is available regarding how the teachers feel about using them. Documentation of the impact of computer-aided instruction on student achievement began in the early 60's. The dearth of research on teacher reaction may indicate that because achievement results generally support computer-use, and the public demands it, computer utilization is a foregone conclusion.

Curriculum experts recognize the fallacy of just such assumptions. Where implementation is concerned, the classroom teacher wields the equivalent of a curricular "pocket-veto." If the teacher is not converted to a particular change, it is unlikely to become part of the school program. By way of illustration, computers might very well be integrated into the classroom, but not necessarily in the manner intended. They could be relegated to the function of electronic textbooks, for example, or as a reward for "appropriate" behavior. The substance of the innovation (computer literacy, for example) is lacking in such instances, rendering the innovation superficial and probably of diminished value. The process of curriculum improvement requires that those who must do the implementing become converted to the change. When they are not, there is

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a tendency to subvert the intended change (Saylor, Alexander & Lewis, 1981, pp. 76-79).

The current emphasis on computer experience for students, which has been mandated in some instances, underscores the need to attend to teacher disposition toward the change. As teachers scramble to "gear-up," one likely consequence is that educators will be obliged to take computer courses that they may otherwise not be inclined to take. The actual commitment to the use of the technology under such circumstances may be open to question.

It seems of value, therefore, to ask whether classroom teachers who have used the computers in training sessions are committed to their use in the classroom, and whether some educational applications are consistently seen to be of greater value to the teacher than others.

Teacher Perceptions

In 1982 Scholastic published a questionnaire called "Planning for Educational Computing." The questionnaire permits one to indicate perceptions regarding:

- where the computer belongs in terms of school priorities,
- how effective the computer is,
- whether teachers and students like computers,
- what educational application makes computers most valuable

Reactions are registered in a Likert-type format. A number is circled indicating the degree to which the respondent

agrees with a particular statement. The instrument offers choices of extremely important, very important, important, somewhat important, and not important at all for each of 15 suggested applications.

Those who completed the questionnaire had participated in a semester-long course entitled "Classroom Applications of Microcomputers" at a university in the Southwest. It included segments in which participants used the computer as a tutor (prepared educational software -- typically drill-and-practice or problem-solving), as a tool (word processing, spread-sheeting, and database software), and as a tutee (the computer as the recipient of the user's expertise in BASIC and LOGO programming languages).

Of the group of 27, 25 were practicing classroom teachers distributed through the various grade levels from kindergarten to college-level instructor. The teachers represented all the major disciplines with the largest group (7) identifying themselves as social studies educators. Seventeen of the group considered themselves computer beginners who had no previous experience with the machines. The remaining ten had various combinations of inservices and college courses in computer-use.

Results

The various applications which the questionnaire suggested for computers are presented in Table 1. All respondents saw a variety of applications for the classroom and expressed interest in using computers in their own

classrooms. Every application which the questionnaire listed received a mean response of at least "important." All but one were perceived to be "very important" (see Table 1).

This paper first asked whether educators who have been exposed to computers are afterward committed to their classroom application. They appear to be. They agreed that teachers should know how to use computers in their classrooms and that respondents, personally, would like to have access to them for instructional, as well as for information management purposes.

The second question asked whether teachers see some applications to be of greater value than others. The questionnaire does not discriminate the importance of various applications particularly well but some indication of relative importance can be gauged by ranking mean responses. Table 1 ranks mean responses in descending order of importance. This particular group favored making computers available first to selected students. Mean responses for those applications designed for the needs of specific groups -- the gifted-talented, reluctant, handicapped, or slow learners -- were more positive than mean responses for applications to which all learners would likely be exposed. Computer literacy, for example, is ranked well down the list, and teaching programming skills recieved the lowest mean response of any application. Problem solving for all students received the second lowest mean response.

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Implications

This indication of the relative lack of importance to these educators of computer literacy, problem solving, and programming skills seems particularly relevant. Oakes and Schneider (1984) have argued that proclamations of a "computer revolution" in education are at least premature, and that "the microchip is altering the process of education as yet only slightly" (p. 74). The revolution that many envisioned was to be fueled by computer activities which require students to use higher level cognitive skills, often the types of skills which are associated with problem solving. Software designed specifically to provide exercise in problem solving was followed in importance only by programming. Although respondents worked with LOGO (Papert, 1980) and were exposed to the rudiments of programming in BASIC, they saw these types of activities as less important than all others listed. It happens that these activities, like the problem solving exercises, require a more sophisticated cognitive effort from the user than do most other types of instructional software. Both LOGO and BASIC require the user to be proactive, not just reactive. The user must initiate activity and, in order to achieve a satisfactory culmination of activities, one must analyze and solve problems in logic and syntax. Ironically, it is the failure to provide precisely such exercises in analysis and synthesis for which educators are criticized.

The tendency to rely on "prepared software" (which,

incidentally, is primarily drill-and-practice material that places a premium on the user's skill with rote) is not surprising. It is not unlike what prevails in typical classes anyway. Many teachers rely to a discouraging degree on prepared materials such as textbooks and work sheets which were intended as supplements rather than as lesson plans. In parallel situations, the computer probably falls far short of its potential as an instructional device. Papert argued that electronic drill-and-practice is analagous to powering a wagon with a rocket engine.

Consistent with the Oakes and Schneider (1984) complaint, a recent editorial lamented that there is no leadership in educational computing, and that the computer is not having much of a role in the reshaping of the school (Educational Technology , 1985). As has already been noted, it is one thing to demand that computers be integrated, it is something else to specify how. In the absence of leadership, educators have responded to what the computer can do for them. Relief from the tedium of drill and practice is obviously one appeal. A second is relief from the constant demands of clerical tasks. Questionnaire results demonstrate that one of the strongest attractions which the computer holds for educators is the information management capacity -- assistance with attendance, scheduling, grades, personnel data, etc. It seems pointless to ask why computers have not transformed instruction when teachers are preoccupied with meeting the demands of noninstructional duties.

Finally, the questionnaire reveals that the amount of training time required of those who will use computers may have been underestimated. Attempts to bridge the technological gap via an inservice or even a semester-long course in classroom applications was perceived to be inadequate. Teachers uniformly registered the desire for more training. It was, in fact, one of their strongest responses.

Unfortunately, the computer band-wagon has competitors. There are any number of educational issues also competing for attention. Results here suggest that a concern for basic skills development through drill-and-practice may have short-circuited the support system for more innovative computer applications.

Change in current educational practice has been called for from many quarters. Although consensus in education is rare, there is substantial agreement about the need to utilize computer technology. Building a case for educational change on the computer will be difficult, however, because rather than adding a new dimension to learning, it is viewed at least by these educators, as a tool by which very conventional tasks can be accomplished.

Table 1
The Importance of Various Computer Applications
In Descending Order

Extremely Important

none

Very Important

Enrichment for the gifted-talented
Assistance for slow learners
Aid for handicapped learners
Aid for reluctant learners
Assistance in basic skills areas
Assistance with attendance
Assistance with student scheduling
Assistance with student personnel data
Computer literacy for all students
Grade averaging
Inventory
Generating instructional materials
Word processing
Problem solving for all students

Important

programming

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